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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,811	12/27/2001	Shigeto Taga	36856.599	1917

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EXAMINER

NGUYEN, DONGHAI D

ART UNIT PAPER NUMBER

3729

DATE MAILED: 12/19/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/026,811

Applicant(s)

TAGA, SHIGETO

Examiner

Donghai D. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 November 2003.
- 2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 16-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 16-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☒ Certified copies of the priority documents have been received in Application No. 09/546,899.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

Response to Amendment

1. The proposed reply filed on November 03, 2003 has been entered as paper no. 6.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 16-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The phrase "said intermediate electrode" (claim 16, lines 15 and 17) lacks antecedent basis. Furthermore, it is unclear which intermediate electrode Applicant refers to is made of Al or Al alloy, and how the base electrodes would increase "the half-width of a locking curve" in the intermediate electrode.

The phrase "said intermediate electrodes ... electrodes" (claim 16, lines 5-7) is vague and indefinite since it is clear how the base electrodes, which are part of the intermediate electrodes, are located between the intermediate electrodes and the electrode pads.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 16, 18, and 19, as best as understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of 4,692,653 to Kushida et al.

Applicant's admitted Prior Art discloses a method of manufacturing an electronic element, comprising the steps of: providing a piezoelectric substrate (21); forming electrode pads (16-18) on the piezoelectric substrate; disposing intermediate electrodes (22) on the electrode pads, said intermediate electrodes including base electrodes (23) located between said electrode pads and said intermediate electrodes; forming bump electrodes (11) on the intermediate electrodes; disposing the electronic element on a package (14) such that said bump electrodes opposes package electrodes (13); and press-bonding said package electrodes to said bump electrodes while applying ultrasonic waves or heat (Page 3, lines 6-7); wherein the intermediate electrode is made of at least one of Al and an alloy including Al (Applicant's Spec. page 2), except said the base electrodes include a metallic material that increases the half-width of a locking curve of an X-ray diffraction peak from a (111) plane of Al in the intermediate electrodes greater than about 15 degrees.

Kushida et al's Col. 1, lines 26-54 teach the metallic material disposes on top of an electrode must have high crystallinity and c-axis orientation, "increases the half-width of a locking curve of an X-ray diffraction peak from a (111) plane of Al in the intermediate electrodes greater than about 15 degrees" for creating a high electro-mechanical coupling factor. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Applicant's Admitted Prior Art to have the base electrodes are made of material that has the high crystallinity c-axis orientation, "increases the half-width of a locking curve of an X-ray diffraction peak from a (111) plane of Al in the intermediate electrodes greater than

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about 15 degrees” as taught by Kushida et al for creating the high electro-mechanical coupling factor.

Regarding claims 18 and 19, it would have been an obvious matter of design choice to choose any design intermediate electrode having a plurality of layers and the bump having a melting point at 450 degrees C or more, since Applicant has not disclosed that the claimed specifics melting point of the bump or plurality of layer of intermediate electrode, provides any advantage, is used for a particular purpose, or solves a stated problem and it appears that the invention would perform well with intermediate electrode and melting point of Applicant's admitted Prior Art.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's Admitted Prior Art in view of Kushida et al as applied to claim 16 above, and further in view of US Patent 5,699,027 to Tsuji et al.

Applicant's admitted Prior Art as modified is silent regarding the step of sealing the package airtight with a cap. However, Tsuji et al. teach the step of sealing the package airtight (Col. 4, lines 59-61) with a cap (17) for preventing breaking the comb electrode (Col. 2, lines 5-10). It would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Applicant's Admitted Prior Art to have the package being sealed airtight with a cap as taught by Tsuji et al for protecting the comb electrode.

Response to Arguments

7. Applicant's arguments with respect to claims 16-19 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donghai D. Nguyen whose telephone number is (703) 305-7859. The examiner can normally be reached on Monday-Friday (9:00-6:00).

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter D. Vo can be reached on (703) 308-1789. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-1148.

DN

A handwritten signature in dark ink, appearing to read 'Peter D. Vo', is written over a horizontal line.

PETER VO
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700